Remarks

I. Status

Claims 1-8, 10-12, 15-16, 19, 21, 23-24, and 26-35 have been amended. Also, the first duplicate Claim 34 (labeled 34A in the Office Action) has been cancelled. No new matter has been added as a result of the amendments. Therefore, Claims 1-35 are currently pending.

II. Objection

The Office Action objected to Claim 34 because the number 34 was used to indicate two different claims. The first Claim 34 (labeled 34A in the Office Action) has been cancelled to address this objection. Assignee respectfully requests that the objection be withdrawn.

III. Section 112 Rejection

Claim 5 was rejected under Section 112 as being "indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." (Office Action, page 2). Assignee respectfully traverses this rejection. Claim 5 has been amended to clarify that a noise detector may be configured to prevent a newly calculated value of an attribute of the modeled wind buffet from exceeding an average value. Thus, the Assignee respectfully submits that the claim meets the requirements of Section 112 and respectfully requests that this rejection be withdrawn.

IV. Section 101 Rejections

Claims 1, 16, 23, 24, 27, and 28 were rejected under Section 101 as directed to non-statutory subject matter. (Office Action, pages 3-4). Claims 3-15, 17-22, 25, 26, and 29-35 were also rejected under Section 101 for depending on a rejected base claim. (Office Action, page 4). Specifically, the Office Action asserts that Claims 1, 16, 23, 24, 27, and 28 cover an abstract idea, based on description in the Summary section of the specification. (Office Action, page 3). The Office Action further asserts that the claims do not cover a practical application by physical transformation and do not produce a useful and tangible result. (Office Action, page 4). Assignee respectfully traverses these rejections.

Claims 1, 16, 23, 24, 27, and 28 recite systems, methods, and a computer readable medium. The Office Action pointed to the Summary section of the specification to assert that

the claims cover an abstract idea, but the Assignee respectfully submits that the analysis must be done with respect to the claims, as set forth below.

Claims 1, 16, and 23 recite specific components of a system that are connected or coupled to one another, not abstract ideas. For example, Claim 1 recites a first noise detector and a noise attenuator electrically connected to the first noise detector. Claim 16 recites a time frequency transform logic, a memory, a background noise estimator coupled to the time frequency transform logic, and a wind noise detector coupled to the background noise estimator. Claim 23 recites a time frequency transform logic, a memory, a background noise estimator coupled to the time frequency transform logic, a wind noise detector coupled to the background noise estimator, and a wind attenuator coupled to the wind noise detector. Each claim clearly recites systems comprising specific components. Therefore, Claims 1, 16, and 23 do not recite abstract ideas.

Claims 24 and 27 have been amended to clarify that the dampening and removing of the wind buffet, respectfully, results in obtaining a noise-reduced signal. The noise-reduced signal from the methods is a useful, tangible, and concrete result. Therefore, Claims 24 and 27 do not recite abstract ideas but instead recite methods producing a useful, tangible, and concrete result.

The Office Action also rejects Claims 28-35 under Section 101 as directed to non-statutory subject matter, asserting that the claims cover a "computer program where no preemption is permitted" and cites page 35 of the "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" ("Guidelines"). (Office Action, page 4). Assignee respectfully traverses this rejection. According to the Guidelines, preemption is not permitted, for example, when a claim recites an "electromagnetic carrier signal that carries solely" an abstract idea, such as "a mathematical formula." Amended Claims 28-35 recite a computer readable medium having software that controls a detection of a noise associated with a wind. In particular, Claims 28-35 recite a practical application of modeling, namely to detect a wind buffet in sound waves. As such, the claims do not preempt the use of modeling in the abstract or the principle of modeling. Instead, when Claims 28-35 are considered as a whole, it is evident that the claims recite a specific application of modeling: to detect a wind buffet. Accordingly, Assignee respectfully requests that this rejection be withdrawn.

V. Section 102 Rejections

Claims 1, 9, 11-13, 15, 28-30, 32, and 34A were rejected under Section 102(e) as being anticipated by Yang et al. (U.S. Patent Application 2003/0040908).

Claims 1, 9, 11-13, 15

Amended independent Claim 1 recites a first noise detector adapted to detect a wind buffet from an input signal by modeling. Yang does not teach this feature. Yang discloses using two signal detectors, where the first signal detector detects a signal s(t) with a speech component and a noise component, and the second signal detector detects a signal x(t) with a mostly noise component. (Yang, ¶¶ 6, 22, 24). The second signal detector is placed so that mostly noise is detected, such as on the floor of an automobile near the chassis. (Yang, ¶¶ 22, 23). Yang removes noise from the signal s(t) that is correlated with the noise in the second signal x(t) to produce an intermediate signal d(t) having speech and some amount of noise. (Yang, ¶ 27). Yang further removes noise from the intermediate signal d(t) by performing a spectrum modification of d(t) with a time-varying noise spectrum N(ω) that is based on the mostly noise signal x(t). (Yang, ¶¶ 29, 70).

Yang includes no teaching or suggestion to detect a wind buffet from an input signal by modeling, as recited in amended Claim 1, but only discloses that a mostly noise signal is directly detected without modeling by the second signal detector simply by virtue of the placement of the second signal detector. (Yang, ¶¶ 6, 22). There is no need to model in Yang because Yang directly detects the noise, and the entire signal is assumed to be mostly noise from the second signal detector. (Yang, ¶¶ 6, 22). Also, Yang does not teach or suggest detecting a wind buffet from an input signal by modeling, as recited in Claim 1, but instead removes noise from a signal: (1) by removing noise in signal s(t) by correlating s(t) with the mostly noise signal x(t); and (2) by performing a spectrum modification of the intermediate signal d(t) with the time-varying noise spectrum N(ω) that is based on the mostly noise signal x(t). (Yang, ¶¶ 27, 29, 70). Thus, Yang proceeds without specifically detecting a wind buffet by modeling, as claimed in Claim 1. Furthermore, even if the time-varying noise spectrum N(ω) could be considered a model, N(ω) is merely the existing signal x(t) in another form and does not detect any new noise, let alone a wind buffet. Therefore, Claim 1 is patentable for at least these reasons. Accordingly, Claims 9, 11-13, and 15 are patentable at least because they depend from Claim 1, their independent allowable base claim.

Claims 28-30, 32, and 34A

Amended independent Claim 28 recites a computer readable medium comprising a signal analysis logic that models a portion of the sound waves that are associated with the wind to detect a wind buffet. The Office Action cited Yang, ¶¶ 6-10 as disclosing the signal analysis logic recited in Claim 28. Yang does not teach this feature. Yang discloses using two signal detectors, where the first signal detector detects a signal s(t) with a speech component and a noise component, and the second signal detector placed to detect a signal x(t) with a mostly noise component. (Yang, ¶¶ 6-7, 22-24). Yang removes noise from the signal s(t) that is correlated with the noise in the second signal x(t) to produce an intermediate signal d(t) having speech and some amount of noise. (Yang, ¶¶ 8, 27). Yang further removes noise from the intermediate signal d(t) by performing a spectrum modification of d(t) with a time-varying noise spectrum that is based on the mostly noise signal x(t) and its transformed signal N(ω). (Yang, ¶¶ 8, 29, 70). Yang also discloses a voice activity detector to detect the presence of speech by transformation of an input signal, derivation and comparison of power values and reference values for the input signal, and filtering. (Yang, ¶¶ 9-10).

Yang includes no teaching or suggestion of signal analysis logic that models a portion of the sound waves that are associated with the wind to detect a wind buffet. In particular, Yang discloses that a mostly noise signal is directly detected without modeling by the second signal detector simply by virtue of the placement of the second signal detector. (Yang, ¶ 6, 22). There is no need to model in Yang because Yang directly detects the noise, and the entire signal is assumed to be mostly noise from the second signal detector. (Yang, ¶¶ 6, 22). Also, Yang does not teach or suggest modeling a portion of the sound waves that are associated with the wind to detect a wind buffet, as recited in Claim 28, but instead removes noise from a signal: (1) by removing noise in signal s(t) by correlating it with the mostly noise signal x(t); and (2) by performing a spectrum modification of the intermediate signal d(t) with the time-varying noise spectrum N(ω) that is based on the mostly noise signal x(t). (Yang, ¶¶ 8, 27, 29, 70). Additionally, Yang discloses a voice activity detector that detects speech in a signal but does not teach or suggest modeling a portion of the sound waves that are associated with the wind to detect a wind buffet. (Yang, ¶¶ 9-10). Thus, Yang proceeds without specifically modeling a portion of the sound waves that are associated with the wind to detect a wind buffet, as claimed in Claim 28. Furthermore, even if the time-varying noise spectrum N(ω) could be considered a model, N(ω) merely is the existing signal x(t) in

another form and does not detect any new noise, let alone a wind buffet. Therefore, Claim 28 is patentable for at least these reasons. Accordingly, Claims 29, 30, and 32 are patentable at least because they depend from Claim 28, their independent allowable base claim. Claim 34A is cancelled, as noted above.

VI. Section 103 Rejections

Claims 2, 16, 18-21, 23, and 35

Claims 2, 16, 18-21, 23, and 35 were rejected under Section 103(a) as being unpatentable over a combination of Yang in view of Shust et al. ("Electronic Removal of Outdoor Microphone Wind Noise") ("Yang-Shust combination"). Claim 2 recites that the noise detector models a line to a portion of the input signal. The Yang-Shust combination does not teach this feature and the Assignee respectfully submits that this feature was not well known in the art. The Office Action asserts that page 2, ¶ 2 and Figure 1 of Shust shows this feature but Shust only discloses using an anemometer to measure instantaneous wind velocity and predicting the wind noise portion of a microphone signal based on the measured wind velocity. (Shust, page 2, ¶ 2 and Fig. 1). Shust discloses linearization of the relationship between the wind velocity and the microphone signal to predict wind noise, but does not teach or suggest a noise detector modeling a line to a portion of the input signal to detect a wind buffet from an input signal by modeling, as claimed in Claim 2. Shust measures only wind velocity and makes predictions about wind pressure, but has no teaching or suggestion to detect a wind buffet. Moreover, Shust does not disclose a noise detector but instead discloses an anemometer that "only senses wind velocity." (Shust, page 3, ¶ 1). Therefore, even if the Yang-Shust combination is made, the combination does not include all of the features recited in Claim 2. Claim 2 is patentable for at least these reasons. Claim 2 is also patentable at least because it depends from Claim 1, its independent allowable base claim.

Amended independent Claim 16 recites a memory comprising wind buffet line fitting rules and a wind noise detector configured to apply the wind buffet line fitting rules to a line fit to a portion of the input signal in the frequency domain to obtain a constrained line adhering to the wind buffet line fitting rules. Amended Claim 16 also recites that the wind noise detector is configured to automatically identify a noise associated with wind based on the constrained line. The wind buffet line fitting rules and the constrained line provide more accurate and efficient wind buffet detection and may limit a masking of voice. The Yang-

Shust combination does not teach these features. Shust discloses measuring instantaneous wind velocity and predicting wind noise based on the wind velocity, and discloses linearization of the relationship between the wind velocity and the microphone signal to predict wind noise. (Shust, page 2, ¶ 2 and Fig. 1). However, the Yang-Shust combination does not teach or suggest wind buffet line fitting rules or a wind noise detector configured to apply such rules to a line fit to a portion of the input signal in the frequency domain to obtain a constrained line, as claimed in Claim 16. The Yang-Shust combination also does not teach or suggest a wind noise detector configured to automatically identify a noise associated with wind based on the constrained line. Instead, Shust only discloses linearization of the relationship between the wind velocity and the microphone signal to predict wind noise, but not with respect to wind buffets. Therefore, even if the Yang-Shust combination is made, the combination does not include all of the features recited in Claim 16. Also, none of the cited references cure the deficiencies in the Yang-Shust combination. Claim 16 is patentable for at least these reasons.

Amended Claim 21 recites that the wind buffet line fitting rules comprise wind buffet slope rules, wind buffet offset rules, and wind buffet coordinate point rules. The Yang-Shust combination does not teach this feature, nor do any of the other cited references, alone or in combination. None of the references disclose specific rules established for wind buffet line fitting, as in Claim 21. Therefore, Claim 21 is patentable for at least these reasons. Claims 18-21 are also patentable at least because they depend from Claim 16, their independent allowable base claim.

Amended independent Claim 23 recites a memory comprising wind buffet line fitting rules and a wind noise detector configured to fit a line to a portion of an input signal, and configured to apply the wind buffet line fitting rules to the line to obtain a constrained line adhering to the wind buffet line fitting rules. Amended Claim 23 also recites a wind attenuator configured to remove a noise modeled by the constrained line and associated with wind that is sensed by the receiver. The Yang-Shust combination does not teach these features. Shust discloses measuring instantaneous wind velocity and predicting wind noise based on the wind velocity, and discloses linearization of the relationship between the wind velocity and the microphone signal to predict wind noise. (Shust, page 2, ¶ 2 and Fig. 1). However, the Yang-Shust combination does not teach or suggest wind buffet line fitting rules or a wind noise detector configured to fit a line to a portion of the input signal and configured to apply wind buffet line fitting rules to the line to obtain a constrained line adhering to the

wind buffet line fitting rules. Instead, Shust only discloses linearization of the relationship between the wind velocity and the microphone signal to predict wind noise, but not with respect to wind buffets. Therefore, even if the Yang-Shust combination is made, the combination does not include all of the features recited in Claim 23. Also, none of the cited references cure the deficiencies in the Yang-Shust combination. Claim 23 is patentable for at least these reasons.

Dependent Claim 35 is patentable at least because it depends from Claim 28, its independent allowable base claim.

Claims 4, 10, 24, 26, 27, and 31

Claims 4, 10, 24, 26, 27, and 31 were rejected under Section 103(a) as unpatentable over a combination of Yang in view of Buchele (U.S. Patent Application 2003/0151454) ("Yang-Buchele combination"). Amended Claim 4 recites that the noise detector is configured to model the wind buffet by calculating a y-intercept for a line fit to the input signal. The Yang-Buchele combination does not teach this feature. The cited paragraphs of Buchele disclose a peak detector circuit that helps to suppress single wind gusts when a sound pressure level ("SPL") exceeds a certain threshold. (Buchele, ¶¶ 34, 40). The Yang-Buchele combination, even if made, does not teach that the noise detector is configured to model the wind buffet by calculating a y-intercept for a line fit to the input signal. Instead, the peak detector disclosed in Buchele only detects if the SPL of a wind gust is above a threshold and fully engages the adaptive filter if the SPL is above the threshold. (Buchele, ¶¶ 34, 40). Therefore, even if the Yang-Buchele combination is made, the combination does not include all of the features recited in Claim 4. Also, none of the cited references cure the deficiencies in the Yang-Buchele combination. Claim 4 is patentable for at least these reasons. In addition, Claim 4 and Claim 10 are patentable at least because they depend from their independent allowable base claim, Claim 1.

Amended independent Claim 24 recites a method of dampening a wind buffet from an input signal including the step of detecting a wind buffet when a high correlation exists between a line and a portion of an input signal. The Yang-Buchele combination does not teach this feature and the Assignee respectfully submits that this feature was not well known in the art. The Office Action asserts that ¶¶ 34 and 40 of Buchele show this feature but the cited paragraphs disclose a peak detector circuit that helps to suppress single wind gusts when a SPL exceeds a certain threshold. (Buchele, ¶¶ 34, 40). Specifically, the Office Action states that the peak detector circuit of Buchele can detect a wind gust "when the input

signal crosses a line." (Office Action, page 15). The Yang-Buchele combination does not teach or suggest detecting a wind buffet when a high correlation exists between a line and a portion of an input signal. Instead, Buchele only discloses that if the peak detector detects that the SPL of a wind gust is above a threshold, then the adaptive filter is fully engaged. (Buchele, ¶¶ 34, 40). There is no disclosure or suggestion of a correlation analysis even if the asserted combination is made. Accordingly, Claims 24 and 26 are also patentable for at least these reasons.

Amended independent Claim 27 recites a method of removing a wind buffet from an input signal including the step of detecting a wind buffet when a high correlation exists between a line and a portion of an input signal. Similarly to the discussion above regarding Claim 24, the Yang-Buchele combination does not teach this feature and the Assignee respectfully submits that this feature was not well known in the art. Buchele discloses that if the peak detector detects that the SPL of a wind gust is above a threshold, then the adaptive filter is fully engaged (Buchele, ¶¶ 34, 40). The Yang-Buchele combination does not teach or suggest detecting a wind buffet when a high correlation exists between a line and a portion of an input signal. Instead, Buchele only discloses that if the peak detector detects that the SPL of a wind gust is above a threshold, then the adaptive filter is fully engaged. (Buchele, ¶¶ 34, 40). There is no disclosure or suggestion of a correlation analysis even if the asserted combination is made. Accordingly, Claim 27 is patentable for at least these reasons.

Claim 31 is also patentable at least because it depends from Claim 28, its independent allowable base claim.

Claims 3, 5, 6, 8, 7, 14, 17, 22, 25, 33, and 34

Dependent claims 3, 5, 6, 8, 7, 14, 17, 22, 25, 33, and 34 were rejected under Section 103(a). The claims are patentable at least because they depend from their respective independent allowable base claims.

VII. Summary

Assignee respectfully submits that the pending claims are patentable. If the Examiner believes that a telephone interview would be helpful in resolving any outstanding issues, the Examiner is respectfully invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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